

REMARKS

Claims 1 – 3 and 6 – 18 are now pending in the application. Claims 4 and 5 have been cancelled. Independent claims 1 and 10 have been amended. Dependant claim 3 has been amended to maintain antecedent basis. Claims 17 and 18 have been added for substantive examination. Support for the claim amendments can be found through the application as originally filed, including the drawings and claims. As such, no new matter has been added.

REJECTION UNDER 35 U.S.C. § 102

Claims 4, 5 and 10 – 16 stands rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Pat. No. 6,637,394 (Marshall). This rejection is respectfully traversed.

Applicant notes that claims 4 and 5 have been cancelled. Claim 10 has been amended to include; providing a spark to any cylinder undergoing a power stroke. Applicant respectfully asserts that Marshall does not teach or suggest the step of providing a spark to any cylinder undergoing a power stroke.

Marshall at best discloses a method to reduce power consumption during starting of a diesel engine. Marshall provides a diesel engine incorporating a hydraulic pump that supplies engine oil at high pressure to the injectors and to exhaust valve override actuators as soon as the diesel engine begins to turn over. Marshall does not teach or suggest providing a spark to any cylinder.

The method of the present invention provides a spark to any cylinder during startup. Therefore, Applicant respectfully submits that claims 10 – 16 are now in condition for allowance.

REJECTION UNDER 35 U.S.C. § 103

Claims 1 and 3 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Marshall in view of the conventional four cylinder engine as set forth on page 4 of Applicant's specification. This rejection is respectfully traversed.

Applicant notes that claim 1 has been amended to include; providing a spark to each cylinder undergoing a power stroke; opening an inlet valve of each cylinder undergoing a power stroke; and opening an exhaust valve of each cylinder undergoing a compression stroke. As explained above, Marshall does not include, providing a spark to each cylinder undergoing a power stroke. Furthermore, Applicant maintains that the method disclosed in Marshall is specifically directed to starting a diesel engine. The method of Marshall is based on engine control used to convert a diesel engine into a compression pump during braking. Marshall does not teach or suggest implementing such diesel control methods into a conventional gasoline engine. See e.g. Col. 3, Lines 50 – 66. Therefore, claims 1 and 3 are now in condition for allowance.

Claim 2 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Marshall in view of the conventional four cylinder engine as set forth on page 4 of Applicant's specification, and further in view of U.S. Pat. No 5,101,780 (Jones). This rejection is respectfully traversed.

Jones at best discloses a method of isolating a single cylinder to perform combustion during the start cycle. The exhaust valves 18 in the remaining cylinders are opened and the fuel injector is turned off so that only one cylinder is functioning. Col. 3, Lines 25 – 30. Jones does not teach or suggest providing a spark to each cylinder undergoing a power stroke; opening an inlet valve of each cylinder undergoing a power stroke; and opening an exhaust valve of each cylinder undergoing a compression stroke. The method disclosed by Jones relies on thermal sensors 30 providing a signal indicating a rise in temperature in the (isolated) cylinder on ignition of fuel in the start cylinder. Once ignition is sensed (in the isolated cylinder), the control logic module activates the other cylinders (initiates fuel delivery) in the normal sequence. Col. 3, Lines 15 – 20.

Applicant submits that because the engine of Jones operates a selected cylinder under normal conditions, i.e. with the starter motor counteracting pumping or compression drag associated with the selected cylinder, the engine of Jones does not provide the reduced load benefits of the present invention. The present invention provides reduced load on the starter motor by opening an inlet valve on each cylinder undergoing a power stroke and opening an exhaust valve on each cylinder undergoing a compression stroke. The present invention initiates fuel delivery once the crankshaft reaches a predetermined rotational speed.

Claims 6 – 9 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Marshall in view of Jones. This rejection is respectfully traversed. As noted above, independent claim 4 has been cancelled. Claims 6 – 9 are now dependent from Independent claim 1. Claim 1 has been amended to include, providing a spark to

each cylinder undergoing a power stroke. Furthermore, claim 1 has been amended to include; opening an inlet valve of each cylinder undergoing a power stroke; and opening an exhaust valve of each cylinder undergoing a compression stroke. As explained, Jones does not teach or suggest opening an inlet valve of any cylinder undergoing a power stroke and opening an exhaust valve of any cylinder undergoing a compression stroke. Therefore, Applicant respectfully submits that claims 6 – 9, which are dependant from claim 1 are in condition for allowance.

Applicant further maintains that newly submitted claims 17 and 18 are in condition for allowance based upon the differences in the art of record set forth in the proceeding discussion.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action, and as such, the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

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